DOCUMENT RESUME

ED 028 135 SP 002 378

By-Wood, Margaret W.; And Others

Training Student Teachers Using the Reciprocal Category System of Interaction Analysis.

Pub Date Feb 69

Note-18p.; Paper presented at the annual meeting of the American Educational Research Association, Los Angeles, California, February 5-8, 1969.

EDRS Price MF-$0.25 HC-$1.00

Descriptors-Behavioral Objectives, *Course Organization, Educational Experiments, *Interaction Process Analysis, *Microteaching, Practicums, Practicum Supervision, Preservice Education, *Simulation, *Student Teaching, Teacher Behavior, Training Techniques, Verbal Communication, Video Tape Recordings

Identifiers-RCS, Reciprocal Category System of Interaction Analysi, West Virginia

An exploratory study investigated the effects of two organizational patterns of microsimulation experiences (concurrently with or sequentially to student teaching) on the verbal teaching behavior of student teachers trained in the Reciprocal Category System of Interaction Analysis (RCS) as compared to their counterparts who received no RCS training. (Microsimulated teaching, as developed at West Virginia University, combines microteaching with simulation; the trainee teaches brief lessons to four other trainees who play roles corresponding to those indicated in a description of a hypothetical class.) Forty subjects in the methods and student teaching classes were randomly assigned to the four treatment groups, and RCS data for three 20-minute student teaching performances were collected for each. Analysis of variance was calculated from the computerized data (measures of the 21 dependent variables, the verbal behaviors measured by RCS). Duncan's New Multiple Range Test and the Sign Test were employed to locate differences and determine general trends. The concurrent arrangment of microsimulated teaching experiences was found to be the most effective organizational pattern of the methods and student teaching block when offered with formal training in interaction analysis. (Other conclusions and implications are discussed.) (JS)

TRAINING STUDENT TEACHERS USING THE RECIPROCAL CATEGORY SYSTEM OF INTERACTION ANALYSIS

Margaret W. Wood
Orange County, Florida Public Schools
and
Florida Technological University

Rogers McAvoy
West Virginia University

Richard L. Ober
West Virginia University

Paper read at the annual meeting of the American Educational Research Association, Los Angeles, California, February 5-8, 1969 (Session 13.4).

INTRODUCTION AND RATIONALE

There is a great challenge today to develop more functional programs of teacher training which include an up-to-date understanding of the educational process and its application to the teaching-learning situation. Indeed our national survival may well depend upon the quality of the products of our teacher-training institutions.

Educators have been concerned with the problem of translating educational practice from the theoretical to the operational level in the classroom. In the past, various methods have been explored in an attempt to bridge this theory-practice gap. Some have assumed that available research and theory by some mysterious law of inevitability automatically become classroom practice without conscious intervention of any kind. The time lapse between an effective educational practice and its wide acceptance has sometimes been fifty years.

With the recent advent of observational systems*, teachers and researchers have found a means to obtain meaningful data that describe the nature of the teaching-learning situation. Because of its inherent analytical nature, systematic observation provides a means for securing feedback which, in turn, can be used for determining a variety of variables that are normally associated with teaching effectiveness. Consequently, a teacher is now in a better position to improve his teaching strategies.

---

*For this study, an observational system is defined as any systematic technique used for purposes of identifying, classifying, and/or quantifying specific teaching activities.

Another recent innovation in teacher training that shows promise as a means for bridging the theory-practice gap is microsimulation. Micro-simulated teaching, a combination of the concepts of micro-teaching (small group, short lesson) with those of simulation (realistic replication of actual teaching-learning situation) and role playing in extra public school classrooms, is an original term in this study.

Extra-public classroom experiences are defined as those teaching activities in the methods course which involve members of the teacher trainee's peer group rather than secondary school students. The classroom enviornment approximates as nearly as possible that of the actual teaching situation.

The antecedents of microsimulation are micro-teaching and simulation. Micro-teaching is a scaled-down teaching encounter which has been developed largely at Stanford University to provide preliminary practice experience in teaching and as a research vehicle to explore training effects under controlled conditions. In micro-teaching, the trainee is exposed to the conditions normally found in a typical classroom without being overwhelmed by the complexity of large numbers of pupils. He is required to teach a brief lesson (five to ten minutes) in his particular teaching subject, to a small group of pupils (up to five). Brief lessons of this sort provide an opportunity for intense supervision and the video-tape recording of the teaching session allows immediate feedback to the teacher-trainee. Another advantage is that pupil feedback may be collected and used. In general, research findings with respect to micro-teaching have been positive.[1] This

---

[1] Dwight W. Allen and Jimmie C. Fortune, An Analysis of Micro-Teaching: A New Procedure in Teacher Education (Stanford, California: Stanford University Press, 1965), p. 45.

technique has been found to be quite useful where funds are available for the purchase of adequate television equipment, and for the reimbursement of students who are willing to participate in the micro-teaching experiences.

According to Bond (1965) simulation is a method by which a practical experience in teaching can be provided without the intervening trauma of the real situation, and which at the same time allows selection of situations that would be most beneficial in providing the experience necessary for greatest reinforcement and transfer in academic classes.[2] Simulated experiences, where beginning student teachers are confronted with specific problem situations in which they are expected to respond, enable student-teachers to experience the impact of a classroom via movie projectors.

As developed at West Virginia University, microsimulation serves two purposes: (1) As a device for implementing techniques and theory, that are part of the methods course, into teaching experiences which are controlled so that the trainee can develop his own individual teaching style and, (2) as a vehicle which allows the teacher-trainee to use an observational system as a means for analyzing his own teaching behavior. In micorsimulation, the trainee is exposed to an approximation of classroom teaching before entering the real situation. He is required to teach several brief lessons (fifteen to twenty) minutes in his teaching subject, to a peer group which consists of four other teacher-trainees each playing a role corresponding to that which is indicated in a description of the hypothetical class. The lesson is recorded via tape recorder. The recording

---

[2]Jack H. Bond, Using Simulation Techniques to Change Attitude of Education Majors Toward Professional Course Objectives (Washington: Health, Education and Welfare, 1965), p. 33.

concludes with a five minute oral group critique. The teacher-trainee then analyzes the various data describing his own performance and subsequently presents a written critique, along with the tape, to his supervisor. Directions for preparation of the critique along with evaluation forms are used by the teacher-trainees for a summation of the microsimulated teaching experience. After a joint analytical session, the teacher-trainee revises the same lesson for video taping. Video taping of the revised microsimulation is conducted in the same manner as the audio taping. During the play-back, information is obtained by the teacher-trainee from his peer group. This feedback provides the basis for a comparison and an analytical critique of the two lessons by the teacher-trainee and his college supervisor.

The primary purpose of this research was to investigate the effects of concurrent and sequential organizational programs of microsimulated teaching experiences in an undergraduate general methods course on the verbal teaching behavior of preservice student teachers who were formally trained in the Reciprocal Category System of Interaction Analysis (RCS)* as compared with their counterparts who were not so trained. This study was conducted in conjunction with the Division of Education at West Virginia University as a part of the regular program in undergraduate teacher education. The study was implemented during the Spring Semester, 1968 and was predicated on the following basic assumptions:

---

*Richard L. Ober, The Development of a Reciprocal Category System for Assessing Teacher-Student Classroom Interaction (University of Florida Publication, 1963). Re: Figure 1 page 5 for a definition of categories.

Category Number Assigned to Party 1[1]	Description of Verbal Behavior	Category Number Assigned to Party 2[2]
1	"WARMS" (INFORMALIZES) THE CLIMATE: Tends to open up and/or eliminate the tension of the situation; praises or encourages the action, behavior, comments, ideas, and/or contributions of another; jokes that release tension not at the expense of others; accepts and clarifies the feeling tone of another in a friendly manner (feelings may be positive or negative; predicting or recalling the feelings of another are included).	11
2	ACCEPTS: Accepts the action, behavior, comments, ideas, and/or contributions of another; positive reinforcement of these.	12
3	AMPLIFIES THE CONTRIBUTIONS OF ANOTHER: Asks for clarification of, builds on, and/or develops the action, behavior, comments, ideas and/or contributions of another.	13
4	ELICITS: Asks a question or requests information about the content subject, or procedure being considered with the intent that another should answer (respond).	14
5	RESPONDS: Gives direct answer or response to questions or requests for information that are initiated by another; includes answers to ones own questions.	15
6	INITIATES: Presents facts, information, and/or opinion concerning the content, subject, or procedures being considered that are self-initiated; expresses ones own ideas; lectures (includes rhetorical questions - not intended to be answered).	16
7	DIRECTS: Gives directions, instructions, order, and/or assignments to which another is expected to comply.	17
8	CORRECTS: Tells another that his answer or behavior is inappropriate or incorrect.	18
9	"COOLS" (FORMALIZES) THE CLIMATE: Makes statements intended to modify the behavior of another from an inappropriate to an appropriate pattern; may tend to create a certain amount of tension (i.e., bawling out someone, exercising authority in order to gain or maintain control of the situation, rejecting or criticizing the opinion or judgement of another).	19
10	SILENCE OR CONFUSION: Pauses, short periods of silence, and periods of confusion in which communication cannot be understood by the observer.	10

[1] [2]Category numbers assigned to Teacher Talk when used in classroom situation.
Category numbers assinged to Student Talk when used in classroom situation.

Figure 1 - Category Descriptions for the Reciprocal Category System (RCS).

1. A critical theory-practice gap exists regarding the transfer of principles of learning from the methods course (Education 120) to the actual student teaching experience (Education 124).

2. A close and uninterrupted sequence should be maintained between student teaching experiences (the internship) and courses in instructional methods and principles of education.

3. Microsimulated teaching techniques can be used effectively during the methods course for the purpose of enabling the teacher-trainee to transfer theory to classroom practice.

4. Involvement of the teacher-trainee in microsimulated teaching techniques, utilizing both audio and video taping in the methods course, provided him with a vehicle for developing his own teaching style.

5. The Reciprocal Category System of Interaction Analysis (RCS) is a reliable means for assessing the verbal interaction in a teaching-learning situation.

6. The verbal classroom behavior of the teacher-trainee is a representative sample of his total teaching behavior.

7. The RCS is an effective instrument for the teacher-trainee's use in planning appropriate teaching strategies as well as for assessing the effectiveness of his teaching performance.

8. A teacher-trainee who has had formal training in interaction analysis is more aware of and better able to control his verbal teaching behavior.

9. Systematic observation in the form of the RCS is an effective means for supplementing the technique of microsimulation as a feedback mechanism.

10. The "feedback" concept is of great importance as it relates to self evaluation by the individual teacher. A comparison between what he had pur-

posely planned to do in a given teaching situation with what he observed himself doing in the same teaching situation through the use of video taping and the RCS are manageable and effective techniques.

11. Tangible feedback through the use of audio taping and RCS data plotted in matrices enables the teacher-trainee to analyze his teaching performance and to revise teaching strategies more appropriate to his objectives.

12. The timing of the methods course (i.e., sequential or concurrent) given in conjunction with the student teaching experience, is an important factor in the training of teachers.

DESIGN AND FINDINGS

Forty subjects participated in this study: twenty science and twenty social studies undergraduate trainees selected from a larger population of students who were regularly enrolled in Education 120 (general methods) and Education 124 (student teaching) at West Virginia University. These 40 subjects were randomly assigned to the four experimental treatment groups (re: Figure 2, page 8) for the eight week study. As shown in Figure 2, experimental groups differed, 1) in organizational patterns of microsimulated teaching experiences that were a part of their general methods and, 2) in the mode of training they received in the RCS. The RCS was used in this study both as a training device and as an instrument for obtaining data describing the verbal behaviors generated in subjects' classrooms during student teaching regarding the dependent variables. The twenty-one dependent variables studied in this research are shown in Figure 3, page 10.

RCS data for three 20-minute teaching performances during student teaching were collected live in the classroom for each of the 40 subjects by a trained and reliable observer. Data were plotted into 19 x 19 matrices

Week	1	2	3	4	5	6	7	8
Treatment #1	Methods with Training in the RCS (Three hours per day)			Concurrent Organizational Pattern* Microsimulated Teaching - (Ed. 120) One hour per day Student teaching - (Ed. 124) Two hours per day				
Treatment #2	Methods with Training in the RCS (Three hours per day)			Sequential Organizational Pattern** Microsimulated Teaching - (Ed. 120) Three hours per day			Student Teaching (Ed. 124) Three hours per day	
Treatment #3	Methods without Training in the RCS (Three hours per day)			Concurrent Organizational Pattern Microsimulated Teaching - (Ed. 120) One hour per day Student Teaching - (Ed. 120) Two hours per day				
Treatment #4	Methods without Training in the RCS (Three hours per day)			Sequential Organizational Pattern Microsimulated Teaching - (Ed. 120) Three hours per day			Student Teaching (Ed. 124) Three hours per day	

*Concurrent organizational pattern. The concurrent organizational pattern of instruction for preservice secondary teachers in the methods course is given for one hour a day, four days a week, during the student teaching experience.

**Sequential organizational pattern. The sequentially arranged instruction of preservice secondary teachers in the methods course is given three hours a day, four days a week, prior to the student teaching experience.

Figure 2 - Design of the Study

(Example, re: Figure 4, page 11) and dependent variable measures were computed by means of a special program in conjunction with an IBM 360/50 computer. An analysis of variance was subsequently calculated from the computerized data of the four experimental groups. For each statistically significant F-ratio, a Duncan's New Multiple Range Test was calculated to determine locations of difference(s). Finally, the Sign Test was employed to determine the presence of any general trends (re: Figure 5, page 12).

In summary of design, the independent variables of this study are the two organizational patterns of microsimulation experiences - concurrently with or sequentially to the student teaching experience. The dependent variables are the 21 verbal behaviors that were generated in the classrooms of student teacher subjects during student teaching as measured by the RCS (re: Figure 3, page 8, for dependent variable descriptions).

CONCLUSIONS AND IMPLICATIONS

Because it was intended to be an exploratory study, the number of and significance attached to the findings and conclusions are somewhat limited in terms of the confidence that can be placed in them. However, it is possible to observe several general trends that are beginning to form as one studies the data. From these trends, it is also possible to draw a series of implications that are relevant to teacher education. The remainder of this paper is directed toward implications of this sort accompanied by a discussion of each.

1. Teacher Warms (Informalizes) the Climate (Total use of Category 1)

2. Teacher Amplification (Total use of Category 3)

3. Teacher Questions (Total use of Category 4)

4. Teacher Cools (Formalizes) the Climate (Total use of Category 9)

5. Teacher Talk (Total use of Categories 1-9)

6. The Accept-Reject Ratio (Total loadings in columns 1, 2, 3 and row 11-19 divided by total loadings in columns 7, 8, 9 and rows 11-19)

7. Student Initiated Talk (Total use of Category 16)

8. Student to Student Talk (Total use of loadings in Student-Student Submatrix)

9. Teacher Extended Amplification (Total use of 3-3 cell)

10. Student Extended Amplification (Total use of 13-13 cell)

11. Teacher Narrow Question (Total use of 4-15 cell)

12. Teacher Broad Question (Total use of 4-16 cell)

13. Student Indirect Interruption (Total loadings in columns 11, 12, 13 and rows 1-9)

14. Student Substantive Interruption (Total loadings in columns 14, 15, 16 and rows 1-9)

15. Student Question Followed by Teacher Question (Total use of 14-4 cell)

16. Student Question Followed by Teacher Response (Total use of 14-5 cell)

17. Teacher-Teacher Flexibility (Total number of loaded cells in teacher-teacher submatrix)

18. Teacher-Student Felxibility (Total number of loaded cells in teacher-student submatrix)

19. Student-Teacher Flexibility (Total number of loaded cells in student-teacher submatrix)

20. Student-Student Flexibility (Total number of loaded cells in student-student submatrix)

21. Total Flexibility (Total number of loaded cells in the entire matrix)

(Note: Refer to Figure 1 for Category Descriptions)

Figure 3 - The Twenty-One Dependent Variables Studied in this Research

COLUMNS

ROWS

	1	2	3	4	5	6	7	8	9	11	12	13	14	15	16	17	18	19	10
1	1																		
2		5																	
3			9 2																
4	Teacher			3							Teacher			11	12				
5	tc				5						to								
6	Teacher					5					Student								
7							5												
8								5											
9									4										
10																			
11																			
12																			
13												10							
14				15	16														
15																			
16															7				
17	Student										Student								
18	to										to								
19	Teacher										Student								
10																			
T																			
%																			

Figure 4 - Areas of the 19 x 19 matrix used to measure selected dependent variable behavior
Steady state cells - Cells along diagonal line which identify continuous talk in a single category.
Transitional cells - are all other cells in matrix which represent movement from one category to another.

	Treatment I RCS Training Concurrent Microsimulation	Treatment II RCS Training Sequential Microsimulation	Treatment III No RCS Training Concurrent Microsimulation	Treatment IV No RCS Training Sequential Microsimulation
Variable I*	-	+	-	+
Variable II	+	-	-	+
Variable III	+	-	-	+
Variable IV	-	-	+	+
Variable V	+	+	-	-
Variable VI	-	-	+	+
Variable VII	+	-	-	+
Variable VIII	+	+	-	-
Variable IX	+	-	-	+
Variable X	+	-	+	-
Variable XI	+	-	+	-
Variable XII	+	-	+	-
Variable XIII**	-	-	+	-
Variable XIV	+	+	-	-
Variable XV	-	+	-	+
Variable XVI	+	-	+	-
Variable XVII	+	-	-	+
Variable XVIII	+	-	-	+
Variable XIX	+	-	-	+
Variable XX	+	-	-	+
Variable XXI	+	-	-	+
Total +	16	5	7	13
Total -	5	16	14	8
	Signif[illegible]nt at .05 level p(x 5) = .013	Significant at .05 level p(x 5) = .013	Not Significant p(x 7) = .095	Not Significant p(x 8) = .192

+Sign indicates one of two top groups on variable listed.

-Sign indicates one of two low groups on variable listed.

*For variable descriptions, re: Figure 3, page 10.

**Three way tie for low.

Figure 5 - Table of Signs for the Four Treatment Groups

Variable Number	Treatment I RCS Training Concurrent Microsimulation Mean ($\bar{X}$)	Treatment II RCS Training Sequential Microsimulation Mean ($\bar{X}$)	Treatment III No RCS Training Concurrent Microsimulation Mean ($\bar{X}$)	Treatment IV No RCS Training Sequential Microsimulation Mean ($\bar{X}$)	F-Ratio
I.	0.96	1.11	1.06	1.27	0.2707
II.	3.88	2.42	3.17	5.36	3.6480*
III.	10.62	9.51	9.49	11.20	0.4331
IV.	0.59	0.59	0.24	0.32	1.1244
V.	58.76	65.15	71.92	69.56	2.4855
VI.	87.99	88.85	93.30	92.34	0.7271
VII.	34.64	31.60	31.03	32.25	0.0853
VIII.	29.93	23.61	18.30	18.44	2.4643
IX.	2.10	1.11	1.76	3.07	3.2840*
X.	1.50	0.55	0.63	0.51	1.2134
XI.	4.94	5.44	4.71	5.23	0.2405
XII.	0.28	0.14	0.23	1.10	2.2705
XIII.	0.02	0.02	0.09	0.02	1.8608
XIV.	0.99	0.88	0.68	0.63	1.1873
XV.	0.16	0.18	0.16	0.24	0.4006
XVI.	1.19	1.27	1.12	1.31	0.1326
XVII.	40.55	40.43	38.56	45.98	1.4862
XVIII.	20.42	18.95	17.34	19.80	0.5163
XIX.	21.64	21.16	20.05	23.38	0.6281
XX.	23.01	15.24	14.74	15.49	3.2743*
XXI.	26.41	23.93	22.67	26.16	1.3747

*Significant at 5% level.

Figure 6 - Summary of F-Ratio's and Means for the Twenty-one Dependent Variables.

A concurrent arrangement of microsimulated teaching experiences was found to be the most effective organizational pattern of the methods and student teaching block when offered with formal training in interaction analysis. From the findings of this study, the hypothesis of no difference was rejected under condition one, (IA-C). A significant F-score on Variable XX supports this rejection. The IA-C group was able to elicit more student-student flexibility than were the other three groups. Results from the Sign Test (re: Figure 5, page 12) show the IA-C group to be significantly different from the other three groups regarding the verbal behaviors of these trainees for the dependent variables. This treatment appeared to be the best combination for enabling a teacher-trainee to analyze and control his verbal teaching behavior.

Dependent Variables II and IX which deal with teacher talk, or the amplification and clarification of student responses, were statistically significant in favor of the NIA-S group. This would seem to indicate that when no formal training in interaction analysis is given teacher trainees, the sequential arrangement of microsimulated teaching experiences will provide him with the assistance necessary for the development of this type of teacher talk. However, the emphasis accorded other variables regarding a reduction in the amount of teacher talk with a corresponding increase in the amount of student involvement, would not place this type of attitudinal variable in a high priority position in this study.

The teacher-trainee in this program was instructed in techniques regarding the stating of educational goals in non-ambiguous terms. The format for designing an appropriate enviornment for learning incorporates into lesson planning the statement of objectives in terms of measurable student

performance. This method of lesson planning was found to be an essential step in the teacher-trainee's development of his individual teaching style.

Systematic observation represents a kind of classroom language which permits the construction of effective teaching strategies for the micro-simulations as well as actual classroom teaching. These specific strategies, founded on sound educational theory, are planned and implemented in the methods course through the use of interaction analysis. These lessons are subsequently analyzed, using IA, to determine whether or not the strategies are appropriate.

It is recommended that microsimulated teaching experiences in the methods course be given prior to the student teaching block in a sequentially organized program. Training in interaction analysis (RCS) should be given at this time along with the behaviroally oriented approach to lesson planning. Concurrently with the student teaching experience bi-weekly conferences should be held for each content area with a specialist from the Division of Education. Data from the actual teaching of the trainee should be collected and supervision would then be a joint responsibility of the trainee and his supervisors. A matrix showing how nearly the trainee came to accomplishing his objectives for the lesson should be used as the basis for the joint evaluative conference.

It was felt that microsimulation techniques along with training in interaction analysis served to reduce the anxiety level in teacher-trainees and may serve to retard the attrition rate in the teaching professions. We currently train five teachers for every one who stays in the classroom.

Another implication growing out of this research deals with the early identification of people who have personalities unsuited to working with students in the teaching learning situation. With the current emphasis on

the emotionally disturbed teacher and his early identification, further research and study along these lines would seem to be indicated. The employment of the techniques used in this study for teacher training may conceivably be used for this purpose in the sophomore or junior years.

There appeared to be a remarkable amount of camaraderie and cooperative behavior among the teacher-trainees involved in this study regarding their work when compared with those who had not been exposed to microsimulated teaching experiences. This would seem to be another area worthy of investigation.

The final point to be made here relates to the economic factors involved in the administration of microsimulated teaching experiences. The method outlined in this study appears to be a more economical way of preparing teachers and is at least as effective as more expensive plans used in other teacher training institutions.

SUMMARY

Microsimulation, as defined in this study appears to be an effective and economical technique to use in the methods course for the purpose of enabling the teacher-trainee to transfer sound educational theory to classroom practice. It may also provide him with a means for developing his own teaching style.

Systematic observation in the form of interaction analysis is an effective means for supplementing the technique of microsimulation in accomplishing the objectives of the teacher training program. The "feedback" concept in the RCS is of great importance as it relates to self-evaluation by the individual teacher.

It is recommended that microsimulation in the methods course be given

prior to the student teaching experience in a sequential organizational pattern. Training in interaction analysis would be given during this time. A concurrent organizational pattern of bi-weekly conferences during the student teaching block would enable the supervisor to become a facilitator of self improvement rather than a critic and judge.